SPECIFICATION

Please amend the title of the application as follows:

Method for Improving Spreading Properties of ~~Fatty Alcohol Compounds, Products~~, and ~~Uses of the Same~~ Cosmetic Ingredients

On page 2 of the specification, please amend line numbers 4-17 as follows:

The present invention relates to methods for dramatically improving the spreading properties of ~~fatty alcohol derived~~ ~~compounds products thereof~~, cosmetic ingredients and uses of the same. More specifically, representative embodiments of the present invention ~~relates~~ relate to ~~the~~ improved spreading properties exhibited by fatty alcohols after they have been acylated.

BACKGROUND

Emollients are materials that are applied to the skin of subjects to produce softness or smoothness. They have been used for centuries in both cosmetic and pharmaceutical products. ~~The original~~ Historically, natural emollients were obtained from extracts or directly concentrated materials from plants or animals, while modern emollients also include partially synthetic (e.g., derivatives of natural products) or completely synthetic materials.

One of the properties that emollients exhibit is that of spreadability. Generally, the pharmaceutical, cosmetic and personal care industries have viewed spreadability as a dual property where some products benefit by using emollients with high spreadability (e.g~~.,~~ e.g., lotions) and other products benefit by using emollients with low spreadability (~~e.g.,~~ e.g., lipsticks).

On page 2 of the specification, please amend line numbers 21-26 as follows:

~~It is an object~~ A representative application of the present invention ~~to provide~~ provides a method for improving the spreading properties of fatty alcohol containing compositions comprising the step of acylating an effective amount fatty alcohols in the fatty alcohol containing composition, whereby the spreading properties are increased over the spreading properties originally exhibited.

~~It is another object~~ A representative application of the present invention ~~to provide~~ provides a method, as described above, wherein ~~the step~~ of ac~~ylating~~ acylation ~~an effective amount of fatty alcohols in the~~ fatty ~~alcohol containing~~

On page 3 of the specification, please amend line numbers 1-26 as follows:

~~composition~~ comprises the steps of providing an amount of fatty alcohol containing composition~~,~~ and adding an effective amount of acylating source to the fatty alcohol containing composition.

It ~~is still another object~~ A representative application of the present invention to ~~provide~~ provides a method, as described above, wherein the acylating source ~~is~~ comprises acetyl chloride, acetic anhydride, butyryl chloride, butyric anhydride, propyryl chloride or propyric anhydride.

~~It is still yet another object~~ A representative application of the present invention ~~to provide~~ provides a method, as described above, wherein the fatty alcohol containing composition ~~is~~ comprises an oil or wax that contains fatty alcohols.

It~~ is further object~~ A representative application of the present invention ~~to~~ provide provides a method, as described above, wherein the fatty alcohol containing composition ~~is~~ comprises a relatively pure fatty alcohol.

~~It is a yet further object~~ A representative application of the present invention ~~to provide~~ provides a method, as described above, wherein the fatty alcohols have one free ~~hydroxy~~ hydroxyl group, which may be correspond to a primary, secondary or tertiary alcohol.

~~It is a still further object~~ A representative application of the present invention ~~to provide~~ provides a method, as described above, wherein the fatty alcohols have more than one free ~~hydroxy~~ hydroxyl group, which may ~~be~~ correspond to a primary, secondary or tertiary ~~alcohols~~ alcohol.

~~It is still yet a further object~~ A representative application of the present invention ~~to provide~~ provides a method, as described above, wherein the fatty alcohols are saturated.

~~It is another object~~ A representative application of the present invention ~~to provide~~ provides a method, as described above, wherein the fatty alcohols are at least mono-unsaturated.

~~It is another object~~ A representative application of the present invention ~~to provide~~ provides a method for improving the spreading properties of fatty alcohol containing compositions comprising the steps of providing an amount of fatty alcohol containing composition~~,~~ and adding an effective amount of acylating

On page 4 of the specification, please amend line numbers 1-4 as follows:

source to the fatty alcohol containing composition, where the acylating source is ~~R_1CO-R_2~~ $R_1C(=O)OC(=O)R_2$, where R_1 is an alkyl substituent of the acyl group having between 1 and 5 carbons; where R_2 is either an organic ~~or inorganic electron withdrawing group~~ residue, and wherein ~~the whereby~~ the spreading properties of the starting material are increased over the spreading properties originally exhibited.

On page 4 of the specification~~,~~ please delete line numbers 5-26.

Please amend the heading of the "Detailed Description" as follows:

DETAILED DESCRIPTION OF ~~PREFERRED~~ REPRESENTATIVE EMBODIMENTS

DETAILED DESCRIPTION OF REPRESENTATIVE EMBODIMENTS

On page 5 of the specification, please amend line numbers 4-31 as follows:

It has been surprisingly discovered that the process of acylation ~~of the fatty alcohols~~ will increase the spreading properties of fatty alcohols and fatty alcohol containing compositions (e.g., compositions containing at least one free ~~hydroxy~~ hydroxyl group). ~~The preferred~~ A representative embodiment of a ~~Fatty~~ fatty ~~Alcohol~~ alcohol ~~Acylation~~ acylation reaction can be illustrated as:

Acyl Source_+_Fatty Alcohol → Acylated Fatty Alcohol_+_residue~~.~~

This reaction typically follows one of the below two ~~preferred~~ representative specific reactions:

1) $R_1C=OOC=OR_1 \quad + \quad HOR_2 \rightarrow R_1C=OOR_2 + R_1C=OOH$

or

2) $R_1C=OCl \quad + \quad HOR_2 \rightarrow R_1C=OOR_2 + HCl$

where R_1 is an alkyl substituent of the acyl group having between 1 and 5 carbons; where R_2 is a long chain fatty alkyl subsistent (non-limiting examples ~~are~~ include unsaturated substituents such as CH_3-$(CH_2)_7$-$CH=CH$-CH_2-$(CH_2)_x$-, and saturated substituents such as CH_3-$(CH_2)_y$-, wherein x ranges from 4 to 12, and y ranges from 14 to 22, and the like); other fatty alcohols may be used and still fall within the scope of the present invention). Further, these fatty alcohols are monohydric or greater; primary, secondary or tertiary alcohols; ~~and/or~~ saturated~~,~~; and/or mono or greater unsaturated. Finally, other reactions that have the effect of producing an acylated fatty alcohol, such as certain transesterification reactions, may be used and still fall within the scope of ~~the~~ gen~~eral reaction of~~ the present invention.

~~The unexpected~~ inc~~rease in spreading properties~~ pro~~duced by acylation of fatty alcohol containing compositions is clearly~~ illus~~trated in FIG. 1.~~ **FIG. 1** shows the increase in spreading value of fatty oils, which contain fatty alcohols, and fatty alcohols along with the acetates of these fatty oils and alcohols. ~~Illustrative~~ Representative fatty oil examples ~~are~~ include: ~~Castor~~

~~Oil has a spreading value~~ of~~ 7.0%. Castor Oil Acetate has a spreading value of 9.1%. This is an increase of 30% relative to~~ Castor Oil. ~~Lesquerella O~~il ~~has a spreading value of 9.3%. Lesquerella Oil Acetate has~~ a sp~~reading value of 13.6%. This~~ is a~~n increase of over 46% relative to Lesqu~~erella~~-Oil. Isopropyl Jojobate~~ has ~~a spreading value of~~ 30~~.6%. Isopropyl Jo~~jobate ~~Acetate~~ has a ~~spreading value of~~ 34.0%. ~~This is an increase of~~ over ~~11% relative to Isopropyl Jojobate.~~ Illustrative pure~~ fatty alcohol exam~~ples ~~are: Octyl Dodecanol has a spreading value of 20.6%.~~

On page 6 please amend lines 1-15 and the table on pages 6-7 as follows:

~~Octyl Dodecanol Acetate~~ has a~~ spreading value of 35.9%. This~~ is~~ an increase of over~~ 74% ~~relative to Octyl Dodecanol. Oleyl Alcohol~~ has~~ a spreading value~~ of ~~26.8%. Oleyl Alcohol Acetate has a spread~~ing ~~value of 39.3%.~~ This is~~ an increase of nearly~~ 47% ~~relative to Oleyl Alcohol. Jojoba Alcoh~~ol ~~has a spreading~~ value of~~ 25.5%. Jojoba Alcohol Acetate has a spreading value of 41.0%. This~~ is an~~ increase of over 60%~~ rela~~tive to Jojoba Alcohol.~~ castor oil, having a spread value of 7.0%; castor oil acetate, having a spread value of 9.1% (this is an increase of 30% relative to castor oil); lesquerella oil, having a spread value of 9.3%; lesquerella oil acetate, having a spread value of 13.6% (this is an increase of over 46% relative to lesquerella oil); isopropyl jojobate, having a spread value of 30.6%; isopropyl jojobate acetate, having a spread value of 34.0% (this is an increase of over 11% relative to isopropyl jojobate). Representative fatty alcohols include: octyl dodecanol, having a spread value of 20.6%; octyl dodecanol acetate, having a spread value of 35.9%(this is an increase of over 74% relative to octyl dodecanol); oleyl alcohol, having a spread value of 26.8%; oleyl alcohol acetate, having a spread value of 39.3% (this is an increase of nearly 47% relative to oleyl alcohol); jojoba alcohol, having a spread value of 25.5%; jojoba alcohol acetate, having a spread value of 41.0% (this is an increase of over 60% relative to jojoba alcohol).

Thus it is readily seen that the acylation of fatty alcohol containing compositions~~,~~ ~~including the pure fatty alcohols,~~ yields dramatic improvements in the spreadability of the compositions.

Spreadability testing was ~~done~~ performed using a ~~Floratech~~ FLORATECH (Chandler, Arizona, USA) method of adding 20 drops of the material to be tested on P5 filter paper obtained from Fisher Scientific (Waltham, Massachusetts, USA). The percentage of the whole paper that was covered by the composition in question is measured after 10 minutes and recorded as the percent ~~spreading~~ spread increase value. Samples were tested five times and the results averaged.

~~An example~~ A representative formulation ~~is as follows~~ may include:

~~Sunscreen~~ with ~~enhanced spreading properties.~~

SUNSCREEN WITH ENHANCED SPREADING PROPERTIES

Phase	INCI Name	% wt./wt.
A.	Water	41.65
	Sodium Dicocoylethylenediamine PEG-15 Sulfate (and) Sodium Lauroyl Lactylate	1.00
	Glycerin	6.00
	Xanthan Gum	0.30
	Disodium EDTA	0.20
B.	Behenyl Alcohol (and) Glyceryl Stearate (and) Glyceryl Stearate Citrate (and) Sodium Dicocoylethylenediamine PEG-15 Sulfate	5.25
	Jojoba Alcohol Acetate (INCI Name not yet assigned)	5.40
	Jojoba Esters	6.40
	Tridecyl Salicylate	5.00
	Ethylhexyl Methoxycinnamate	6.00
	Butyl Methoxydibenzoylmethane	1.00
	Tocopheryl Acetate	1.00
	VP/Eicosene Copolymer	1.00
C.	Isononyl Isononanoate (and) Titanium Dioxide (and) Alumina (and) Simethicone (and) Polyglyceryl-6 Ricinoleate	7.0
D.	Carbomer	10.00
E.	Hydrolyzed Jojoba Esters (and) Water (aqua)	1.00
	Water	0.80

	Phenoxyethanol (and) Methylparaben (and) Ethylparaben (and) Butylparaben (and) Propylparaben (and) Isobutylparaben	1.00
	Total	100.00

On page 7 of the specification, please amend line numbers 2-6 as follows:

1. Add ~~Disodium~~ disodium EDTA to the water of Phase A with stirring at 75°C. Add ~~Sodium~~ sodium ~~Dicocoylethylenediamine~~ dicocoylethylenediamine PEG-15 ~~Sulfate~~ sulfate and ~~Sodium Lauroyl Lactylate~~ sodium lauroyl lactylate and ~~Glycerin~~ glycerin with stirring until completely mixed.

2. Combine all ingredients of Phase B and mix completely at 75°C. Add Phase B to Phase A with rapid stirring.

On page 7 of the specification, please amend line number 9 as follows:

5. Reduce the mix temperature to 55°C. Add Phase E ingredients with stirring.

On page 8 of the specification, please amend line numbers 2-20 as follows:

In addition to the ~~essential~~ representative ingredients in the compositions of the present invention, further ~~material~~ materials may be present for functional or aesthetic ~~reason~~ reasons. Antioxidants, including tocopherols and tocotrienols (compounds homologous to tocopherols that differ by the presence of three unsaturated bonds in the phytyl side chain), and oryzanol (a mixture of ferulic acid esters of sterols, ~~e.g.,~~ *e.g.,* beta-sitosteryl ferulate and methyl ferulate, and triterpene alcohols, e.g., 24-methylenecycloartenyl ferulate; see Bailey's Industrial Oil and Fat

Products, 4th Ed., John Wiley, New York, 1979, volume 1, pages 407 to 409) may be present. Fragrances, colorants (~~e.g.,~~ *e.g.,* dyes or pigments), topically applied medications, UV absorbers, whitening agents, emulsifying agents, binders, scrubbing particulates, and the like may be present.

Additional fatty elements ~~that~~ ~~may be included can~~ may be selected from mineral oils like paraffin or petroleum oils, silicone ~~sil~~icon oils, vegetable oils like coconut, almond, apricot, corn, jojoba, olive, avocado, sesame, palm, eucalyptus, rosemary, lavender, pine, thyme, mint, cardamon, orange blossoms, soy beans, bran, rice, colza, and castor oils, animal oils and fats like tallow, lanolin, butter oil, fatty acid esters, fatty alcohol esters, waxes whose melting point is on the same-~~as~~ order of the skin's (animal waxes like bee's wax, ~~carnauba~~ carnuba or candelilla waxes, mineral waxes like micro-crystalline waxes and synthetic waxes like polyethylene or silicone waxes). All acceptable oils used in cosmetology ~~can~~ may be used, like the ones that have been mentioned in ~~the~~ CTFA's book, Cosmetic Ingredient Handbook, First edition, 1988, The Cosmetic, Toiletry and Fragrance Association, Inc., Washington (~~hereinafter,~~ "CTFA").

On page 8 of the specification, please amend line numbers 29-30 as follows:

Detergent or foaming agents, for example, may include disodic cocoamphodiacetate salts; lauroylether sulfosuccinate disodic salts; the vegetable protein acylates; the cocoyl gu~~tamate~~

On page 9 of the specification, please amend line numbers 1-31 as follows:

glutamate triethanolamine salts; the lauroyl sarcosinate sodium salts; the glucoside decyl-ethers; and the sodium sulfate lauroyl ethers.

Pasty active compounds (compounds with extremely low spreadability) like lanolin by-products (acetyl lanolin, lanolin, and lanolin alcohols); cholesterol by-products, cholesterol esters (12 cholesteryl hydroxy stearate); ~~pantnelythritol~~ pentaerythritol hydroxylated esters, linear mono-esters like butyl stearate, arachidyl propionate or stearyl heptanoate, and triglycerides with a fatty chain less that C_{16} can also be used. These substances may be water-soluble, lipid-soluble, or lipid-soluble and water soluble at the same time, or dispersible. They can be chosen from the compounds that are in CTFA at pages 51 to 101.

Surface active agents, cationic, anionic, non-ionic and/or Zwitterionic may be used. These surface agents ~~can~~ may be chosen, for example, from: ~~the~~ hydrophilic surface agents~~,~~ (like glycols, such as hexylene glycol, butylene-1,2 glycol, ethyl-2-hexyl sulfosuccinate); mono and diglycerides; oxyethylene octylphenol, and the salts derived from cocoyl and lauroyl collagen; sorbitan palmitate, and the polyoxyethylene ~~by~~ by-products of sorbitol palmitate esters; and ~~salts~~ ~~of~~ fatty ~~chain~~ quaternary ammonium salts. Suitable anionic surfactants which may be used include the water-soluble alkali metal or ammonium salts having alkyl radicals containing from ~~abut~~ about 8 to about 22 carbon atoms, the term alkyl being used to include the alkyl portion of higher acyl radicals. Examples of suitable synthetic anionic surfactants are sodium or ammonium alkyl sulfates, especially those obtained by sulfating higher (C_8-C_{18}) alcohols produced, for example, from tallow or coconut oil; alkyl (C_9-C_{20}) benzene sulfonates, particularly sodium linear secondary alkyl (C_{10}-C_{15}) benzene sulfonates; alkyl glyceryl ether sulfates, especially those ethers of the higher alcohols derived from tallow or coconut oil and synthetic alcohols derived from petroleum; coconut oil fatty ~~monogyceride~~ monoglyceride sulfates and sulfonates; salts of sulfuric acid esters of higher (C_8-C_{18}) fatty alcohol-alkylene oxide, particularly ethylene oxide reaction products; the reaction products of fatty acids such as coconut fatty acids esterified with isoethionic acid and neutralized with sodium hydroxide; sodium and potassium salts of fatty acid amides of methyl taurine; alkane monosulfonates such as those derived from reacting alpha-olefins (C_8-C_{20}) with sodium bisulfite and those derived from reacting paraffins with SO_2 and Cl_2 and then hydrolyzing with a base to produce a random sulfonate; and olefin sulfonates, which term is used to describe the material made by reacting olefins, particularly C_{10}-C_{20} alpha-olefins, with SO_3 and then neutralizing and hydrolyzing the reaction product. The preferred anionic surfactants are

On page 10 of the specification, please amend line numbers 9-25 as follows:

The amount of anionic surfactant present in the composition will generally range from about 0 or 1% or 4 to 12% ~~by weight (total ingredients)~~ total ingredients by weight. The amphoteric or Zwitterionic surfactant, may optionally be present at a level of at least about ~~abut~~ 0.1 or at least about 0.25 percent by weight of the total composition, per 1 part by weight of the content of anionic surfactant present in the composition.

Examples of amphoteric surfactants that may be used in the composition of the invention are betaines and compounds that can be broadly described as derivatives of aliphatic secondary and tertiary amines in which the aliphatic radical can be straight chain or branched and wherein one of the aliphatic substituent contains from ~~abut~~ about 8 to 18 carbon atoms and one contains an ionic water solubilizing group, e.g., carboxy, sulfonate, sulfate, phosphate, or phosphonate. Examples of compounds falling within this definition are sodium 3-dodecylaminopropionate, sodium 3-dodecylaminopropane sulfonate, N-alkyltaurines, such as prepared by reacting dodecylamine with sodium isethionate, ~~N-higher alkyl~~ higher N-alkyl aspartic acids and the products sold under the trade name ~~"Miranol"~~ MIRANOL (Rhodia Inc., Cranbury, New Jersey, USA).

Makeup or cosmetic compositions ~~comprising~~ in accordance with the present invention may also contain as an optional ingredient, a film-forming, skin-tightening agent, particularly a plant derived biological polysaccharide cosmetic ingredient that may be combined with a casein hydrolysate.

On page 10 of the specification, please amend line numbers 30-31 as follows:

Suitable co-emulsifiers are both known w/o (water in oil) and o/w (oil in water) emulsifiers. Typical examples of fats are glycerides while suitable waxes include ~~inter alia~~ *inter alia*

On page 11 of the specification, please amend line numbers 1-31 as follows:

beeswax, paraffin wax or microwax~~es~~. Suitable thickeners include ~~are~~, for example, crosslinked polyacrylic acids and derivatives thereof, polysaccharides, more particularly xanthan gum, guar guar, agar agar, alginates and tyloses, ~~carboxymethyl~~ carboxyl-methyl cellulose and hydroxyethyl cellulose, also fatty alcohols, monoglycerides and fatty acids, polyacrylates, polyvinyl alcohol and polyvinyl pyrrolidone. In the context of the invention, biogenic agents include ~~are~~, for example, plant extracts, protein hyd~~rolyzates~~ hydrolysates and vitamin complexes. Typical film-formers include ~~are, for example,~~ polyvinyl pyrrolidone ~~pyrolidone~~, vinyl pyrrolidone ~~pyrolidone~~ /vinyl acetate copolymers, polymers of the acrylic acid series, quaternary cellulose derivatives and similar compounds. Suitable preservatives include are, for example, formaldehyde solution, ~~p-hydroxybenz~~oate *p*-hydroxybenzoate or sorbic acid. Suitable pearl esters include ~~are~~, for example, glycol distearic acid esters, such as ethylene glycol distearate, and also fatty acids and fatty acid monoglycol esters. The dyes used may be selected from many of the substances that are permitted and suitable for cosmetic purposes, as listed for example in the publication "Kosmetische Farbemittel" of the Farbstoffkommission der Deutschen pages 81-106. These dyes are typically used in concentrations of 0.001 to 0.1% by weight, based on the mixture as a whole.

The total percentage content of auxiliaries and additives may be 1 to 50% by weight and may be 5 to 40% by weight, based on the formulation.. The formulations may be produced in any known manner, ~~i.e. for example~~ e.g., by hot, cold, hot/cold or PIT emulsification. These are purely mechanical processes that do not involve a chemical reaction. The cosmetic and/or pharmaceutical formulations may have a water content of 25 to 95% by weight and preferably 50 to 75% by weight.

~~The preferred~~ Representative ~~embodiment~~ embodiments of the invention are ~~is~~ described above in the Drawings and Detailed Description ~~of Preferred Embodiments~~. While these descriptions directly describe the above embodiments, it is understood that those skilled in the art may conceive modifications and/or variations to the specific embodiments shown and described herein. Any such modifications or variations that fall within the purview of this description are intended to be included therein as well. Unless specifically noted, it is the intention of the inven~~tor~~ inventors that the words and phrases in the specification and claims be given the ordinary and accustomed meanings to those of ordinary skill in the applicable art(s). The